



XACML 3.0 Intellectual Property Control (IPC) Profile Version 1.0

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Related work:

This specification is related to:

- [eXtensible Access Control Markup Language \(XACML\)](#)

Abstract:

This specification defines a profile for the use of XACML in expressing policies for intellectual property control (IPC). It defines standard attribute identifiers useful in such policies, and recommends attribute value ranges for certain attributes.

Status:

This document was last revised or approved by the eXtensible Access Control Markup Language (XACML) TC on the above date. The level of approval is also listed above. Check the "Latest Version" or "Latest Approved Version" location noted above for possible later revisions of this document.

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1 Introduction

{Non-normative}

This specification defines a profile for the use of the OASIS eXtensible Access Control Markup Language (XACML) [XACML] to write and enforce policies for the purpose of providing access control for resources deemed intellectual property (hereinafter referred to as IP). Use of this profile requires no changes or extensions to the [XACML] standard.

This specification begins with a non-normative discussion of the topics and terms of interest in this profile. The normative section of the specification describes the attributes defined by this profile and provides recommended usage patterns for attribute values.

This specification assumes the reader is somewhat familiar with XACML. A brief overview sufficient to understand these examples is available in [XACMLIntro].

For our purposes, IP may be defined as legal property rights over mental creations. IP owners can receive exclusive rights to their creations, if certain conditions are met. These exclusive rights can be exploited by the owner for profit, either directly through sales of products, or indirectly through licensing.

IP is an asset; perhaps the most valuable asset an organization has. IP can be licensed to other organizations in cases of outsourcing and/or to generate revenue from IP sharing arrangements.

IP value tends to increase when properly protected, though there are differing points of diminishing returns. IP protection doesn't guarantee security; it just provides a compensation mechanism for cases of unlawful exploitation. IP valuation and protection are often criteria for venture capital investors.

Broadly speaking, there are four main categories of intellectual property: copyrights, trademarks, trade secrets, and patents. Copyrights confer time-limited exclusive rights of ownership and/or use to the creator of the work. A copyright is typically used to protect artistic works such as photographs, music, books, etc. Copyrights are internationally recognized, though there are differences in the terms and enforcement.

Trademarks are the IP protection scheme of names, logos, symbols, products, etc. For example, in the U.S. there are 2 main types:

- For general usage, or for not-yet-registered trademarks ™
- For trademarks registered with the USPTO ®

Trademarks are also internationally recognized through the Madrid system, which requires registration through the World Intellectual Property Organization (WIPO), a United Nations agency. The World Trade Organization also sets legal minimum standards for IP protection among member nations.

Patents are property rights granted to an inventor to prevent others from profiting from the invention for a limited time in exchange for public disclosure of the invention when the patent is granted. Patents apply to processes, machines, articles of manufacture, or composition of matter (including biological), or derived innovations. Patents require detailed disclosure of information, designs, processes, etc. Patents are administered in U.S. by the USPTO, and are internationally recognized by WTO TRIPS, WIPO, and European Patent Convention.

Trade secrets are IP protection of formulae, processes, designs, information, etc. that are not easily obtainable that a business uses for competitive advantage. They are often protected by legal contracts such as non-disclosure agreements, non-compete agreements, or proprietary information agreements. Trade secrets are the most common form of industrial IP protection, and outnumber patents. However, trade secrets are often categorized as "proprietary" information, and may not be discovered as trade secrets unless litigated. They are not federally protected in the U.S., though most states have adopted the Uniform Trade Secrets Act. However, theft of trade secrets is prohibited by U.S. Economic Espionage Act of 1996. Trade secret status requires less disclosure than patents. Trade secrets are well protected by European Patent Convention as "know how". No international treaties protect trade secrets, though WTO TRIPS, GATT, and NAFTA have provisions for trade secret protection.

Other IP related concepts, such as **public domain**, **PII**, **proprietary**, and **third-party proprietary** will be defined in the glossary section.

50 The attributes and glossary terms defined below are not an exclusive or comprehensive list of all the
51 attributes that may be required for rendering authorization decisions concerning IP. For example, PDPs
52 would have to evaluate other entitlements, such as group membership, from PIPs. This profile is meant
53 as a point of reference for implementing IP controls, and may be extended as needed for organizational
54 purposes. Software vendors who choose to implement this profile should take the attributes herein as a
55 framework for IP controls, but allow individual implementers some flexibility in constructing their own
56 XACML-based authorization policies and PDPs.

57 The goal of this profile is to create a framework of common IP-related attributes upon which authorization
58 decisions can be rendered. This profile will also provide XACML software developers and authorization
59 policy writers guidance on supporting IP control use cases.

60 1.1 Glossary

61 Authority

62 The entity which is responsible for authorizing the transaction. This can be a particular company,
63 organization, or contract.

64 Copyright

65 A form of limited and temporary government-granted monopoly which gives the creator of an
66 original work some rights for a certain time period in relation to that work, including its publication,
67 distribution and adaptation; after which time the work is said to enter the public domain. Copyright
68 applies to concrete expressions of information, but not the information itself.

69 Country

70 A national political administrative unit recognized for diplomatic and trade purposes by
71 governments and other international organizations.

72 EAR

73 Export Administration Regulations, US laws and regulations administered by the Department of
74 Commerce.

75 IP-Designee

76 A designation for the persons or entities with designated intellectual property rights.

77 IP-Owner

78 A designation for the entity which owns the intellectual property.

79 ITAR

80 International Traffic in Arms Regulations; USA laws and regulations administered by the
81 Department of State.

82 License

83 An agreement granting rights in Intellectual Property.

84 Location

85 The *location* of the requesting principal. Values of acceptable locations may be specified by
86 legal contract, and may be specific to implementations. PDPs and PEPs SHOULD be configured
87 for mutual understanding of said values.

88 Nationality

89 A country of which a person is a citizen.

90 Organization

91 A company or other legal entity of which a person can be an employee or agent.

92 Patent

93 A set of exclusive rights granted by a government to an inventor or his assignee for a limited
94 period of time in exchange for a disclosure of an invention.

- 95 **PII**
- 96 Personally identifiable information. For example, U.S. Social Security Numbers.
- 97 **Proprietary**
- 98 Information protected by an organization by technical controls. May sometimes be used
- 99 synonymously with “trade secret”.
- 100 **Public domain (PUB)**
- 101 Information that has been demoted from copyright, trademark, trade secret, or patented status.
- 102 No intellectual property controls are usually necessary for items considered public domain.
- 103 **Third-party proprietary**
- 104 Intellectual property which has been legally entrusted to the care and use of another organization.
- 105 **Trademark**
- 106 A distinctive sign or indicator used by an individual, business organization, or other legal entity to
- 107 identify that the products, and/or services to consumers with which the trademark appears
- 108 originate from a unique source of origin, and to distinguish its products or services from those of
- 109 other entities.
- 110 **Trade secret**
- 111 A formula, practice, process, design, instrument, pattern, or compilation of information which is
- 112 not generally known or reasonably ascertainable, by which a business can obtain an economic
- 113 advantage over competitors or customers. In some jurisdictions, such secrets are referred to as
- 114 "confidential information" or "classified information".

115 1.2 Terminology

116 The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD

117 NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described

118 in [RFC2119].

119 1.3 Normative References

- 120 [RFC2119] S. Bradner, *Key words for use in RFCs to Indicate Requirement Levels*,
- 121 <http://www.ietf.org/rfc/rfc2119.txt>, IETF RFC 2119, March 1997.
- 122 [XACML] OASIS Committee Draft 01, *eXtensible Access Control Markup Language*
- 123 *(XACML) Version 3.0*, 16 April 2009. [http://docs.oasis-open.org/xacml/3.0/xacml-](http://docs.oasis-open.org/xacml/3.0/xacml-3.0-core-spec-cd-1-en.html)
- 124 [3.0-core-spec-cd-1-en.html](http://docs.oasis-open.org/xacml/3.0/xacml-3.0-core-spec-cd-1-en.html)

125 1.4 Non-Normative References

- 126 [XACMLIntro] OASIS XACML TC, *A Brief Introduction to XACML*, 14 March 2003,
- 127 [http://www.oasis-](http://www.oasis-open.org/committees/download.php/2713/Brief_Introduction_to_XACML.html)
- 128 [open.org/committees/download.php/2713/Brief_Introduction_to_XACML.html](http://www.oasis-open.org/committees/download.php/2713/Brief_Introduction_to_XACML.html)
- 129 [ISO3166] ISO 3166 Maintenance agency (ISO 3166/MA),
- 130 http://www.iso.org/iso/country_codes.htm
- 131

132 1.5 Scope

133 Many intellectual property access control decisions can be made on the basis of the resource’s

134 **copyright**, **trademark**, **patent**, **trade secret**, or other **custom** classification. This profile defines standard

135 XACML attributes for these properties, and recommends the use of standardized attribute values.

136 In practice, an organization’s intellectual property protection policies will be a mixture of rules derived

137 from laws and regulations, along with enterprise-specific rules derived from government-approved

138 bilateral or multilateral agreements with other organizations.

139 **1.6 Use cases**

140 PDPs may need to consider intellectual property protection schemes when evaluating authorization
141 decisions. This profile is designed to provide a framework of additional <Attributes> for such decisions.

142

143 Copyright use case: an authorization decision depends on whether or not the resource in question is
144 protected by copyright.

145

146 Trademark use case: an authorization decision depends on whether or not the resource in question is a
147 designated trademark.

148

149 Patent use case: an authorization decision depends whether or not the resource in question is protected
150 by a patent. Patent designation may follow.

151

152 Trade secret use case: an authorization decision depends whether or not the resource in question is
153 designated as a trade secret.

154

155 PII use case: an authorization decision depends whether or not the resource in question is designated as
156 personally identifiable information.

157

158 Third-party proprietary: an authorization decision depends whether or not the resource in question is
159 designated as a third-party proprietary resource.

160

161 License: a calling PEP may need to log that a particular license applies to the authorization decision
162 rendered by the PDP.

163

164 **1.7 Disclaimer**

165 NOTHING IN THIS PROFILE IS INTENDED TO BE A LEGALLY CORRECT INTERPRETATION OR
166 APPLICATION OF U.S. OR ANY GOVERNMENT INTELLECTUAL PROPERTY LAWS OR
167 REGULATIONS. USE OF THIS PROFILE IN AN ACCESS CONTROL SYSTEM DOES NOT
168 CONSTITUTE COMPLIANCE WITH ANY INTELLECTUAL PROPERTY RESTRICTIONS. THIS
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170 AGENCIES RESPONSIBLE FOR ENFORCING INTELLECTUAL PROPERTY LAWS, NOR BY ANY
171 LEGAL EXPERT IN THIS FIELD.

172 Organizations that use this profile should ensure their intellectual property protection by engaging
173 qualified professional legal services.

174 2 Profile

175 2.1 Resource Attributes

176 2.1.1 IPC-Type

177 The IPC-Type classification value shall be designated with the following attribute identifier:

178 `urn:oasis:names:tc:xacml:3.0:ipc:resource:ipc-type`

179 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. Examples of
180 acceptable values of the attribute SHALL be “PUB”, “PII”, “EC-US”, “COPYRIGHT”, “TRADEMARK”,
181 “PATENT”, “TRADESECRET”, “PROPRIETARY”, or “THIRD-PARTY PROPRIETARY”. Other values
182 may also be defined later, depending on an organization’s authorization needs.

183 The use of “THIRD-PARTY PROPRIETARY” may introduce ambiguity in a federated authorization model.
184 In that case, “PROPRIETARY” with a corresponding **IP-Owner** value SHOULD be used to distinguish IP
185 owned by an entity other than the PDP’s home organization.

186 2.1.2 IPC-Data

187 IPC-Data classification values shall be designated with the following attribute identifier:

188 `urn:oasis:names:tc:xacml:3.0:ipc:resource:ipc-data`

189 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. The purpose of
190 this attribute is to convey additional data about the intellectual property resource, such as author names,
191 patent numbers, proprietary tracking information, etc.

192 2.1.3 IP-Owner

193 IP-Owner classification values shall be designated with the following attribute identifier:

194 `urn:oasis:names:tc:xacml:3.0:ipc:resource:ip-owner`

195 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. This attribute
196 names the owner of the IP.

197 2.1.4 IP-Designee

198 IP-Designee classification values shall be designated with the following attribute identifier:

199 `urn:oasis:names:tc:xacml:3.0:ipc:resource:ip-designee`

200 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. This attribute
201 names the designated custodian of the IP.

202 2.1.5 EC-US

203 EC-US classification values shall be designated with the following attribute identifier:

204 `urn:oasis:names:tc:xacml:3.0:ipc:resource:ec-us`

205 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>.

206 This attribute can contain export control data related to the EC-US profile. If the IP resource is also
207 export-controlled, it can be indicated here, and invoke the EC-US determination as needed. The attribute
208 could also contain the result of an EC-US decision.

209 2.1.6 License

210 License classification values shall be designated with the following attribute identifier:

211 `urn:oasis:names:tc:xacml:3.0:ipc:resource:license`
212 The Data Type of this attribute is <http://www.w3.org/2001/XMLSchema#string>.
213 This attribute can be used to indicate whether or not a specific resource is governed by a particular
214 license arrangement.

215 **2.2 Subject Attributes**

216 **2.2.1 Nationality**

217 Nationality classification values shall be designated with the following attribute identifier:

218 `urn:oasis:names:tc:xacml:3.0:ipc:subject:nationality`

219 The Data Type of this attribute is <http://www.w3.org/2001/XMLSchema#string>. The value of this
220 attribute MUST be in the range of 2-letter country codes defined by **[ISO3166]**.

221 Nationality shall denote the country in which the subject currently has legal status as a “national” or
222 citizen.

223 **2.2.2 Organization**

224 Organization classification values shall be designated with the following attribute identifier:

225 `urn:oasis:names:tc:xacml:3.0:ipc:subject:organization`

226 The Data Type of this attribute is <http://www.w3.org/2001/XMLSchema#string>.

227 Organization shall denote the organization to which the subject in the request belongs. A common
228 scheme such as DUNS SHOULD be used to promote interoperability.

229 **2.3 Environment Attributes**

230 **2.3.1 Location**

231 Location classification values shall be designated with the following attribute identifier:

232 `urn:oasis:names:tc:xacml:3.0:ipc:environment:location`

233 The Data Type of this attribute is <http://www.w3.org/2001/XMLSchema#string>.

234 **2.4 Action Attributes**

235 **2.4.1 Storage**

236 Storage classification values shall be designated with the following attribute identifier:

237 `urn:oasis:names:tc:xacml:3.0:ipc:action:storage`

238 The Data Type of this attribute is <http://www.w3.org/2001/XMLSchema#string>.

239 **2.4.2 Physical transmission**

240 Physical transmission classification values shall be designated with the following attribute identifier:

241 `urn:oasis:names:tc:xacml:3.0:ipc:action:physical-transmission`

242 The Data Type of this attribute is <http://www.w3.org/2001/XMLSchema#boolean>.

243 **2.4.3 Electronic transmission**

244 Electronic transmission classification values shall be designated with the following attribute identifier:

245 `urn:oasis:names:tc:xacml:3.0:ipc:action:electronic-transmission`

246 The Data Type of this attribute is <http://www.w3.org/2001/XMLSchema#string>.

247 **2.4.4 Encryption type**

248 Encryption type classification values shall be designated with the following attribute identifier:

249 `urn:oasis:names:tc:xacml:3.0:ipc:action:encryption-type`

250 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>.

251 **2.4.5 Marking**

252 Marking classification values shall be designated with the following attribute identifier:

253 `urn:oasis:names:tc:xacml:3.0:ipc:action:marking`

254 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. Examples of
255 marks could be “Proprietary”, “Confidential”, etc.

256 **2.4.6 Disposal**

257 Disposal classification values shall be designated with the following attribute identifier:

258 `urn:oasis:names:tc:xacml:3.0:ipc:action:disposal`

259 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>.

260 **2.4.7 Authority**

261 Authority classification values shall be designated with the following attribute identifier:

262 `urn:oasis:names:tc:xacml:3.0:ipc:action:authority`

263 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>.

264 This attribute can be used to describe the associated contract or statement of work authorizing the
265 access. Other types of values could be used depending on an organization’s needs.

266 **3 Identifiers**

267 This profile defines the following URN identifiers.

268 **3.1 Profile Identifier**

269 The following identifier SHALL be used as the identifier for this profile when an identifier in the form of a
270 URI is required.

271 `urn:oasis:names:tc:xacml:3.0:profiles:ipc`

272

273 4 Conformance

274 Conformance to this profile is defined for *policies* and *requests* generated and transmitted within and
275 between XACML systems.

276 4.1 Attribute Identifiers

277 Conformant XACML *policies* and *requests* SHALL use the attribute identifiers defined in Section 2 for
278 their specified purpose.

279 4.2 Attribute Values

280 Conformant XACML *policies* and *requests* SHALL use attribute values in the specified range or patterns
281 as defined for each attribute in Section 2 (when a range or pattern is specified).

282 NOTE: In order to process conformant XACML *policies* and *requests* correctly, *PIP* and
283 *PEP* modules may have to translate native data values into the datatypes and formats
284 specified in this profile.

285

286 A. Acknowledgements

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289 **Participants:**

290 John Tolbert, The Boeing Company

291

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293

294

B. Revision History

295

[optional; should not be included in OASIS Standards]

296

Revision	Date	Editor	Changes Made
CD 1	6/18/09	John Tolbert	Initial committee draft.

297